Interview Summary	Application No.	Applicant(s)	
	10/539,919	HONDMANN ET AL.	
	Examiner	Art Unit	
	Patrick F. O'Reilly III	3749	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Patrick F. O'Reilly III*.

(2) *Kenneth Rinehart*.

(3)*Russell W. Warnock, Attorney for Applicant*.

(4)_____.

Date of Interview: 5/8/07

Type: a)☐ Telephonic b)☐ Video Conference
c)☒ Personal [copy given to: 1)☐ applicant 2)☐ applicant's representative]

Exhibit shown or demonstration conducted: d)☐ Yes e)☒ No.
If Yes, brief description: _____.

Claim(s) discussed: *13*.

Identification of prior art discussed: *Chang (US 5,788,565); Lin (CN 1041271 A)*.

Agreement with respect to the claims f)☐ was reached. g)☐ was not reached. h)☒ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: *See Continuation Sheet*.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Patrick F. O'Reilly III
Examiner's signature, if required

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The applicant's attorney agreed with the examiner that the present independent claim 13 read on the Chang reference. Moreover, he suggested filing an RCE in order to incorporate unclaimed features into the claims. As one such example, the applicant's attorney suggested incorporating the details of engagement between the plate-shaped region of the ventilator container and the side wall bent region (as best illustrated in Fig. 2A of the disclosure). The examiner agreed with the applicant's attorney that an RCE with amended claims incorporating unclaimed features was an appropriate course of action because such an amendment would require further substantive considerations and an additional search. It was also agreed that the examiner would provide the applicant's attorney with a copy of the English translation for Lin (CN 1041271 A) as an attachment to this Interview Summary.

KENNETH RINEHART
PRIMARY EXAMINER

PTO 07-3154

CC=CN DATE=19900418 KIND=A
PN=1041271

A TYPE OF KITCHEN RANGE HOOD
[Yizhong Chufang Paiyouyanji]

RUNQUAN LIN

UNITED STATES PATENT AND TRADEMARK OFFICE
Washington, D.C. March 2007

Translated by: FLS, Inc.

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APPLICANT	(71):	LIN, RUNQUAN
DESIGNATED CONTRACTING STATES	(81):	
TITLE	(54):	A TYPE OF KITCHEN RANGE HOOD
FOREIGN TITLE	[54A]:	YIZHONG CHUFANG PAIYOUYANJI

PATENT APPLICATION CLAIMS /2*

1. A type of kitchen range hood, comprising electronics, fan, switch, enclosure, spiral casing, gas collection plate, oil collection cup, air inlet, air exhaust, and illumination device characterized by a reverse plate of the fan being the same plate of the top plate of the enclosure; the impeller front plate of the fan is tapered, and the cutoff value range of the outer diameter of the impeller is 215 mm $\leq D_1 \leq$ 283 mm, the cutoff value range of the arc radius of the impeller blade is 160 mm $\leq R_4 \leq$ 215 mm, the cutoff value range of the diameter at the arc center of the impeller blade is 196 mm $\leq D_3 \leq$ 380 mm, and the cutoff value range of the diameter of the impeller front plate is 155 mm $\leq D_2 \leq$ 210 mm; a standard Archimedes spiral is used on the inner wall of the spiral casing.

2. A range hood as described in Claim 1, wherein it is characterized by the slant angle of the aforementioned impeller front plate being 0.5° $\leq$ ∂ $\leq$ 32°.

3. A range hood as described in Claim 1, wherein it is characterized by each parameter of the aforementioned impeller being at an optimal value of D_1 = 274 mm, D_2 = 170 mm, D_3 = 260 mm, R_4 = 202 mm, and ∂ = 21°.

DESCRIPTION OF THE INVENTION /3

A TYPE OF KITCHEN RANGE HOOD

The present invention involves a type of kitchen range hood. It is suitable for use existing kitchens as well as the kitchens of newly constructed homes with shared exhaust ducts as a select product of architectural design to remove harmful gases from inside a kitchen.

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* Numbers in the margin indicate pagination in the foreign text

Current commonly used kitchen range hoods are constructed of an impeller and fan spiral casing design resulting in a great loss of energy. The fan pressure provided by the range hood is too low and when the fans are in operation, its characteristics do not match public exhaust duct system resistance. When public exhaust duct system resistance is increased, the operation state of the range hood will degrade and the amount of air that gets sucked through will greatly decrease. Thus, the effectiveness of removing the pollutants in the kitchen will also decrease. Similarly, installing such range hood on a public exhaust duct system where the air exhaust pressure provide by the range hood to too great, several floors of an living complex that use the same exhaust duct will experience air collusion (and the combination of odors). Therefore, it is key to have the range hood provide an appropriate amount of exhaust pressure. In addition, when a range hood is used in an existing kitchen, most are setup with the exhaust duct going through walls and external windows to directly exhaust the air into the atmosphere. When the outside wind speed is great, the amount of air exhausted out by the range hood in operation is decreased, thereby affecting the effectiveness of removing pollutants. Existing range hoods are not able to address this issue because of its structure.

The purpose of the present invention is to provide a type of range hood that when there is a change in external resistance, the exhaust functionality will remain stable and will continue to operate reliably. And, when operated on a shared exhaust pipe system of a multi-story housing complex, it will prevent the mixing of odors from all the kitchens on

each floor. And, it can reduce the electricity consumed by the range hood and reduce the noise during operation.

The purpose of the present invention is realized through the following technical solution. Design the impeller front plate to form a tapered shape and ensure an optimized design of the size of each of the impeller blades to ensure optimal data. Use a standard Archimedes spiral for the inner wall of the spiral casing of the range hood. In addition, design a single plate from a side plate of the fan and the top plate on the case. This will save on materials and reduce vibration.

The present invention utilizes the aforementioned structural solution and therefore offers the benefits of a higher efficiency of removing pollutants, uses less electrical power, emits lower noise, operates ideally, resists being affected by changes in resistance, and prevents the problem of mixing odors when used in a shared exhaust system over similar products.

The attached diagrams further explain the present invention.

Figure 1 is a primary view cross section of the range hood;

Figure 2 is a vertical view of the range hood;

Figure 3 is a primary view cross section of the impeller in the range hood;

Figure 4 is a vertical view of the impeller in the range hood; /4

Figure 5 is a primary view of the impeller front plate in the range hood;

Figure 6 is a diagram of the range hood of the present invention installed in the kitchen of a home using a public exhaust pipe system.

Figure 7 is a diagram of the range hood of the present invention installed in the kitchen of a home using a public exhaust pipe system using a direct exhaust method.

The range hood 1, illumination device 9, micro electronics 17, and switch 18 are installed on the case 2 of the range hood. The micro electronics 17 drive a fan. The oil and smoke, as well as polluting gases in the kitchen are sucked into the spiral casing 7 of the range hood 1 through the inlet 3. Then, the oil is separated automatically and collected in the oil collection cup 5 for removal. After being separated, the gas is passed through the gas exhaust 4 and expelled out to the shared exhaust pipe 14. The exhaust is then sent out into the atmosphere through the shared exhaust pipe with several ceiling outlets for dilution. Or, in existing kitchens, a direct exhaust method is used to sent the gas out the window or through on exterior wall to the atmosphere. The fan impeller is composed of a front plate 10, a back plate 11, blades 12, and a spiral case 13. In order to complete the purpose provided by the present invention, experiments were performed on the impeller size to determine an optimized design and obtain optimal parameters. The outer diameter of the impeller D_1 is 215 mm $\leq D_1 \leq$ 283 mm, the arc radius of the impeller blade R_4 is 160 mm $\leq R_4 \leq$ 215 mm, the diameter at the arc center of the impeller blade D_3 is 196 mm $\leq D_3 \leq$ 280 mm, and the diameter of the impeller front plate D_2 is 155 mm $\leq D_2 \leq$ 210 mm. A standard Archimedes spiral is used on the inner wall of the spiral casing. Moreover, the impeller front plate has a tapered design. Its slant angle α of the tapered design is 0.5° $\leq \alpha \leq$ 32°. In addition, the inner wall design of the spiral casing 7 is a

standard Archimedes spiral. In order to conserve materials and reduce vibration, ones side plate 8 of the fan and the top plate of the case 2 use the same plate. Each parameter of the impeller is at an optimal value of D_1 = 274 mm, D_2 = 170 mm, D_3 = 260 mm, R_4 = 202 mm, and α = 21°.

DIAGRAMS /5

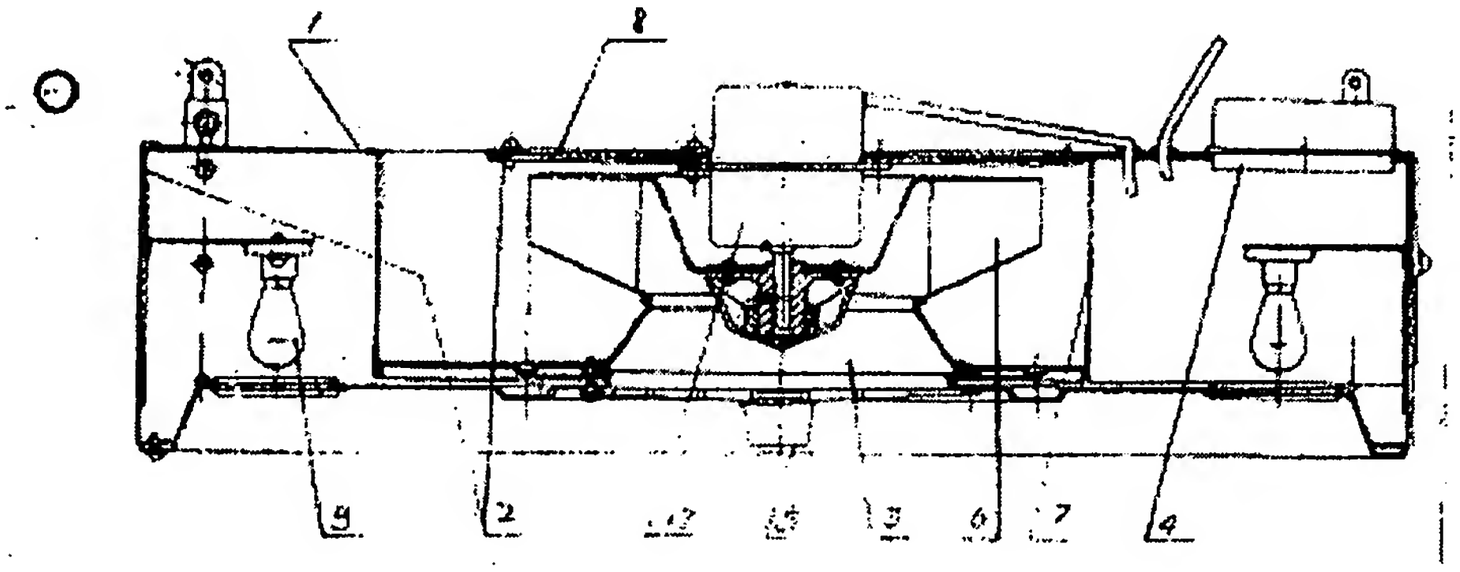

Figure 1

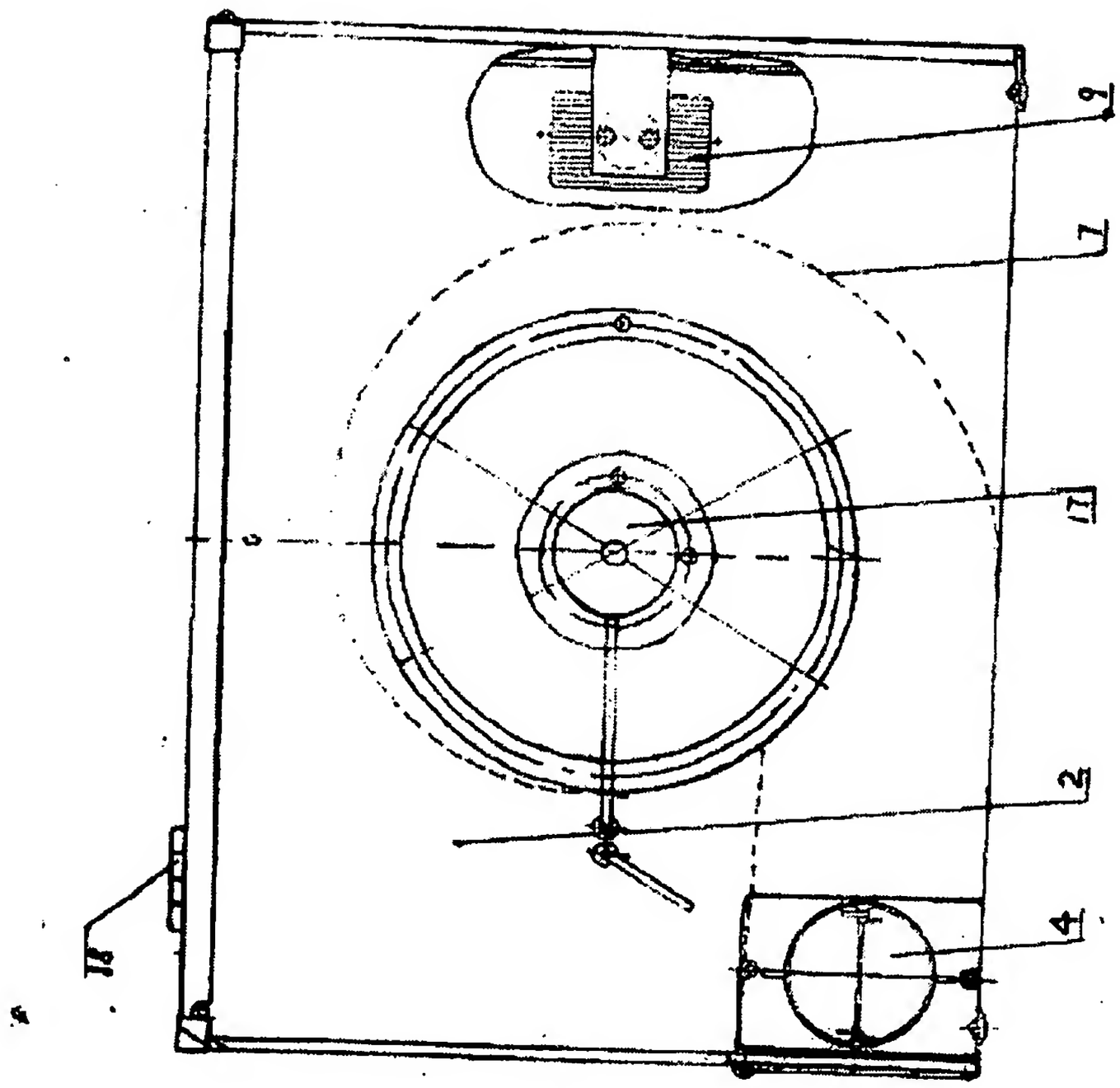

Figure 2

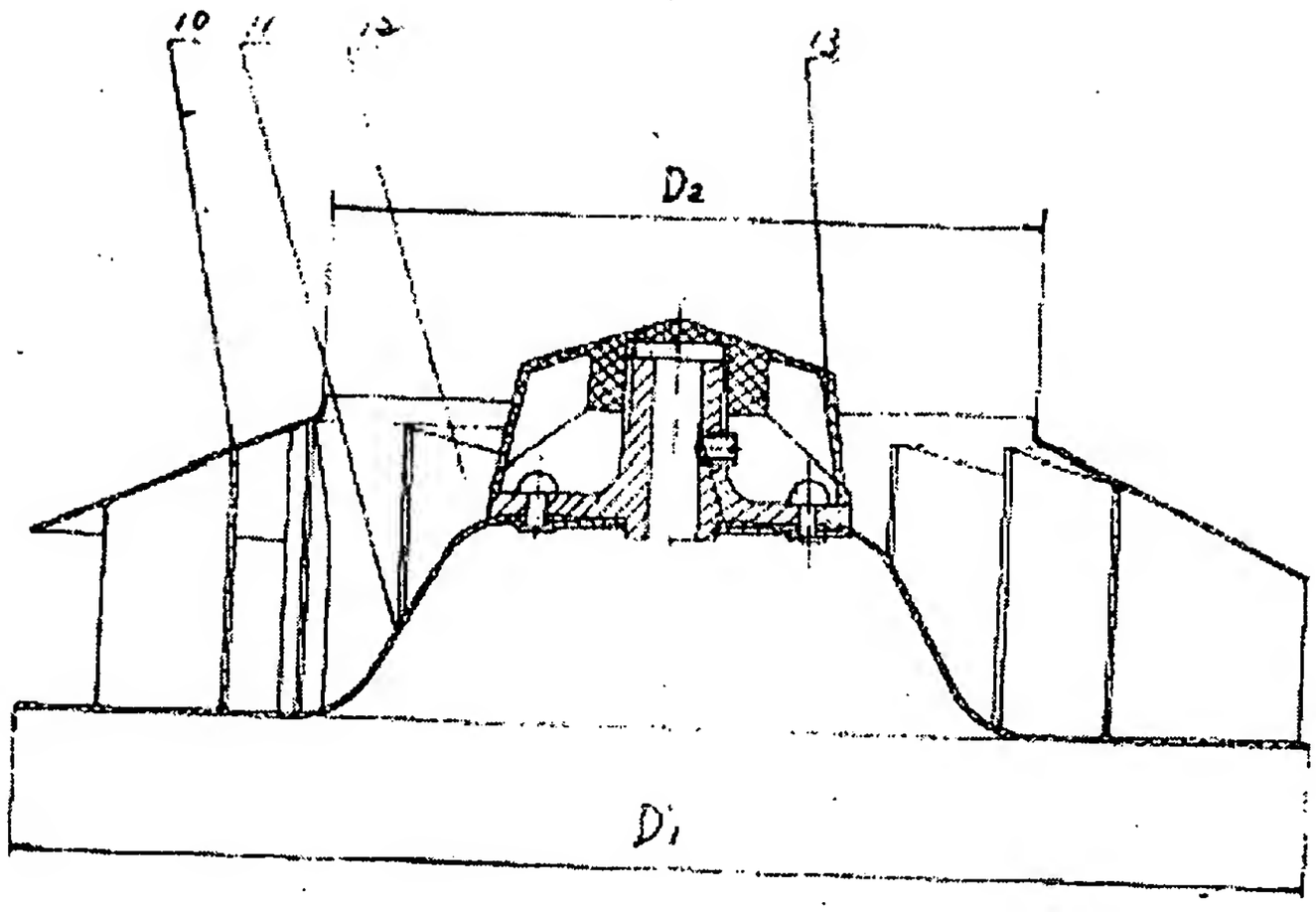

Figure 3

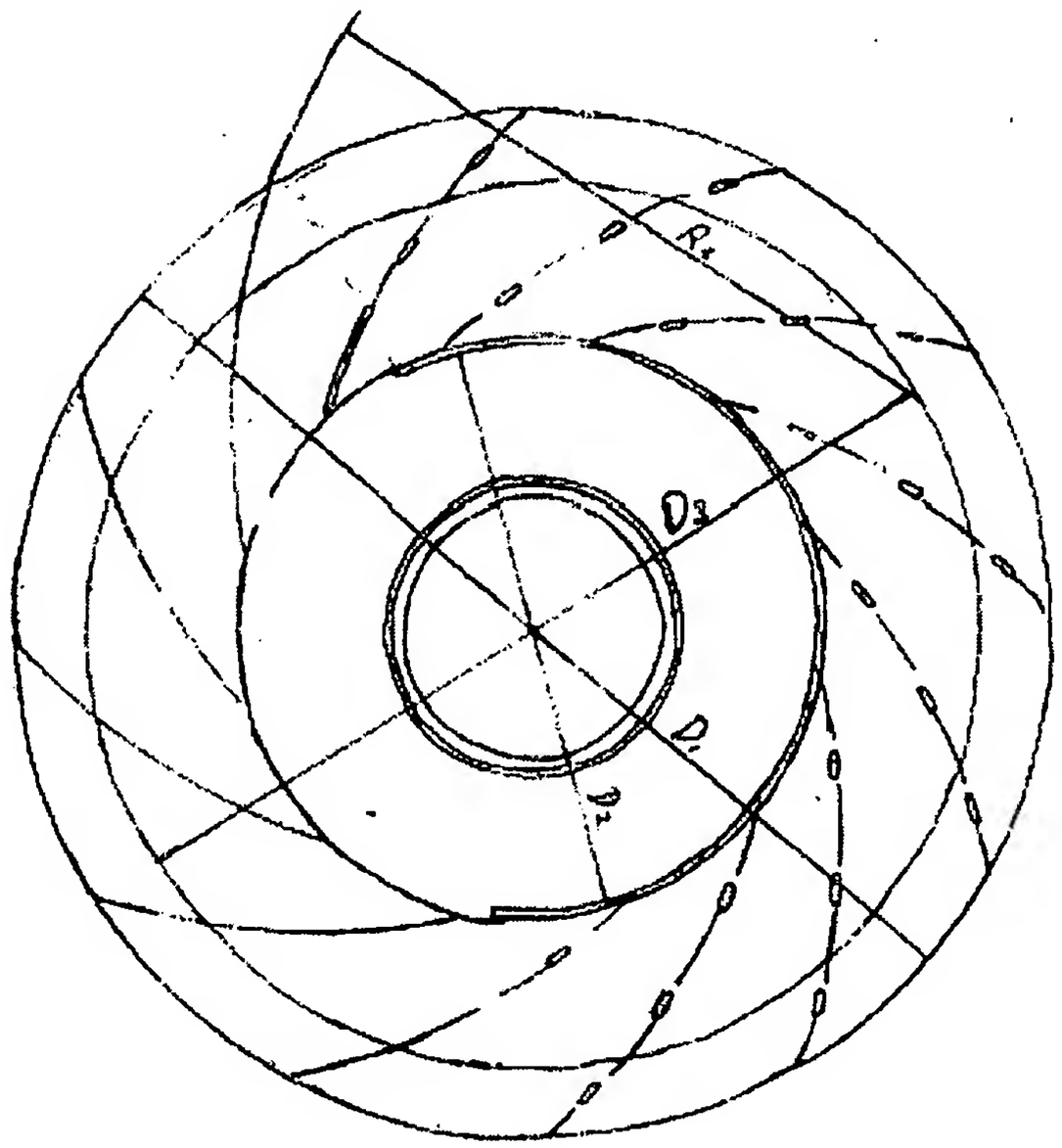

Figure 4

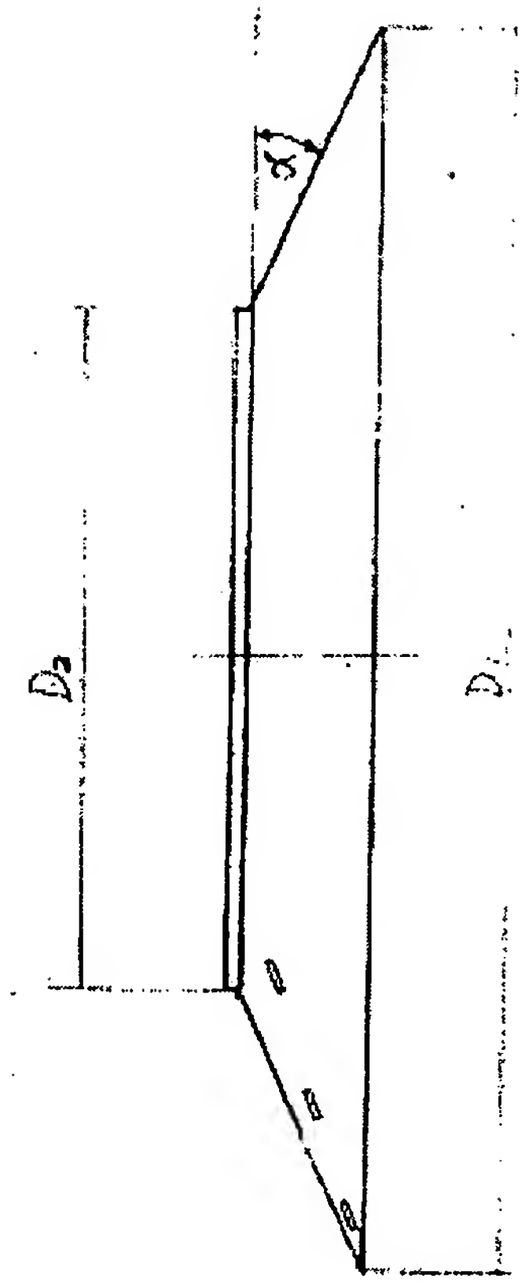

Figure 5

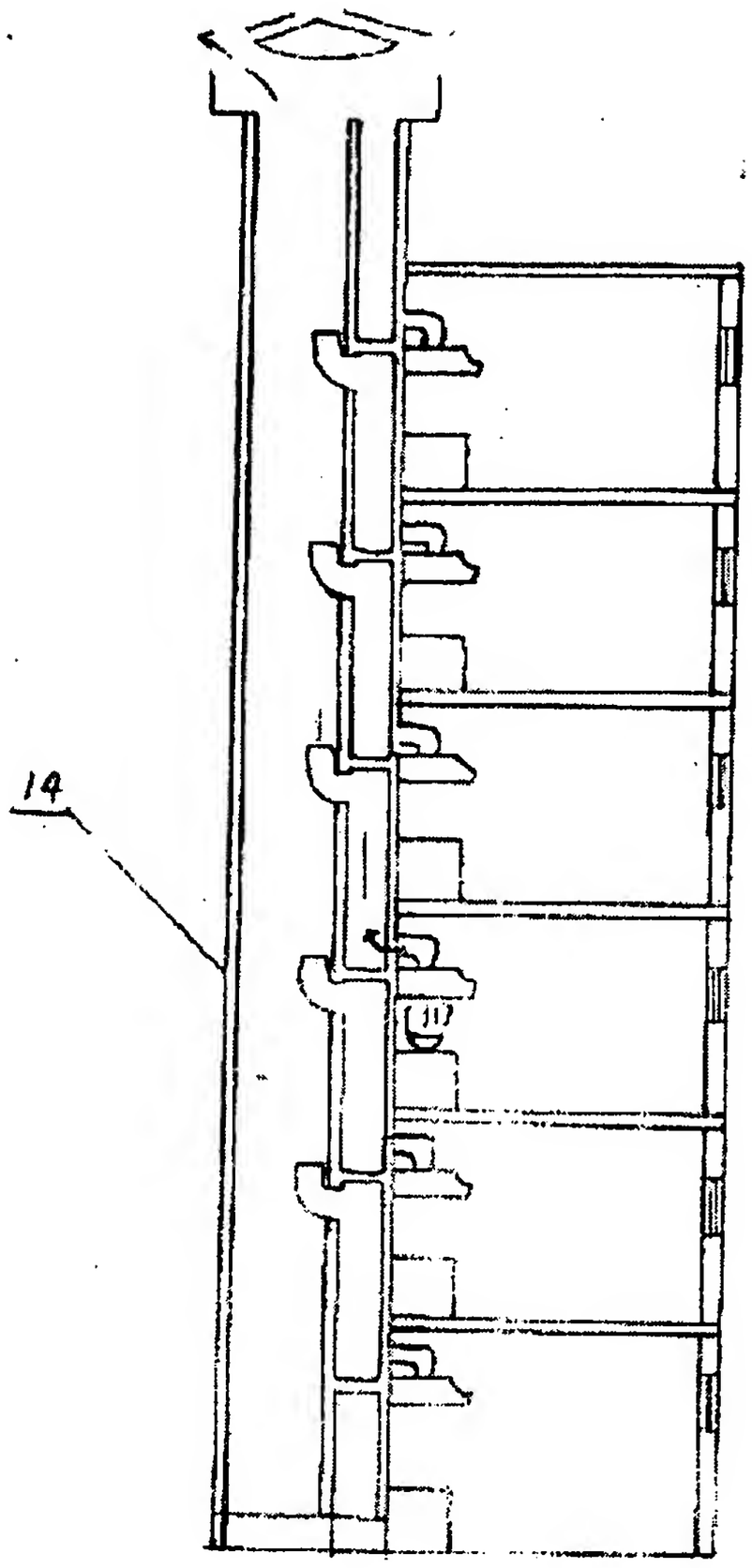

Figure 6

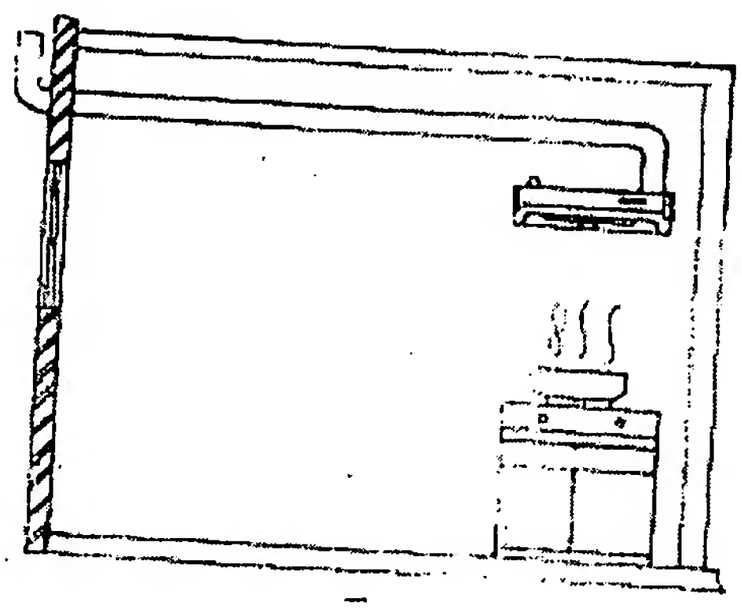

Figure 7